REMARKS

Claims 1-3, 7, 8, 13, 15, 17, 18, 20-23, 25, 26, and 29 are pending in the subject application upon entry of the amendments submitted with this Reply. Claims 1-3, 7, 8, 13, 15, 17, 18, 20-23, 25, 26, and 29 have been amended as shown in pages 2-10 of this Reply. Support for the amendments can be found in the original filed specification at, for example, paragraphs [0029] to [0055]. Accordingly, no new matter has been introduced by the amendments. Favorable reconsideration of the subject patent application is respectfully requested in view of the comments and amendments herein.

I. Rejection of Claims 1-3, 7, 8, 13, 15, 17, 18, 20-23, 25, 26, and 29 Under 35 U.S.C. §103(a)

Claims 1-3, 7, 8, 13, 15, 17, 18, 20-23, 25, 26, and 29 stand rejected under 35 U.S.C. §103(a) over Shattil (U.S. 7,593,449) in view of Yoshida et al. (U.S. 5,734,647 – hereinafter referred to as "Yoshida"). Withdrawal of this rejection is requested for at least the following reason. The cited art fails to teach or suggest all features recited in claims 1-3, 7, 8, 13, 15, 17, 18, 20-23, 25, 26, and 29.

The subject application generally relates to reducing a cross-polarization contribution to overall interference. For example, in a satellite communication systems employing orthogonal code division multiple access (OCDMA), significant interference, with respect to signals transmitted on a return link (e.g., terminal to gateway via a satellite), can be generated, for a first terminal, by other terminals utilizing opposite polarizations as the first terminal. Conventionally, such other terminals employ differing long codes than the first terminal. The subject application provides mechanisms by which identical long codes are employed by terminals utilizing opposite polarizations to reduce such cross-polarization interference.

In particular, independent claim 1 recites "*[a] method for reducing cross-polarization interference in a wireless communication system, comprising: generating first data to be transmitted from a first transmission terminal; encoding the first data with a long code at the first transmission terminal to produce a first long-encoded signal; applying a first polarization to the first long-encoded signal to produce a first long-encoded, polarized signal; and transmitting the first long-encoded, polarized signal from the first transmission terminal to at least one destination,* ***wherein the encoding the first data with the long code at the first***

transmission terminal comprises utilizing an identical long code also employed by a second transmission terminal transmitting signals having an opposite polarization to the first polarization." Similarly, independent claim 15 recites, in part, "*...encoding first data with a long code to produce a first long-encoded signal...wherein the encoding the first data with the long code comprises utilizing an identical long code employed by a disparate computing device to transmit, with an opposite polarization from the first polarization, second data.*" Independent claim 18 recites, in part, "*...a long code generator configured to generate a long code, wherein the long code generated is identical to a second long code employed by a disparate transmission terminal transmitting signals having opposite polarization to a polarization utilized by the transmission terminal...*" Further, independent claim 21 recites, in part, "*...means for encoding first data, generated at a first transmission terminal, with a long code to produce a first long-encoded signal...wherein the means for encoding the first data further comprises means for utilizing an identical long code to that employed by a second transmission terminal configured to transmit signals having an opposite polarization to the first polarization.*" The cited art fails to teach or suggest such aspects as recited in independent claims 1, 15, 18, and 21.

Shattil provides transmission protocols based upon carrier interferometry (CI) to reduce multi-path interference. CI is a class of multicarrier processing techniques that use sets of phase shifts to overlay and separate data streams. (*See* col. 4, lines 34-42). In one example, Shattil discloses that CI can be utilized with CDMA. For instance, a user is assigned a plurality of phase spaces, wherein each phase space corresponds to a superposition of carriers that provide a chip for the user's CDMA code. While Shattil discloses that users can share same carriers and phase spaces, the codes associated with each user are different. (*See* col. 36, lines 48-54). For instance, Shattil discloses each user including a unique spreading sequence. (*See* col. 38, lines 4-15). Moreover, Shattil discloses that different data streams are encoded onto different CI codes. (*See* col. 76, line 67 to col. 77, line, 1).

As conceded in the Office Action dated January 24, 2011, Shattil fails to teach or suggest a terminal, transmitting with an opposite polarization with respect to a disparate terminal, utilizing an identical long code as the disparate terminal. The Office Action cites Yoshida to make up for these deficiencies of Shattil with respect to independent claims 1, 15, 18, and 21. In particular, col. 9, lines 2-5 and Fig. 4 of Yoshida are cited. The cited passage recites that "multipliers 6 and 8 multiply the quadrature signals I and Q outputted from the M-ary digital

modulator 4 by an elongated spreading code to spread the quadrature signals I and Q." It is contended in the Office Action that the above recited passage teaches terminals, transmitting with opposite polarizations, utilizing an identical long code. However, I and Q signals, as one skilled in the art would recognize, are in-phase and quadrature components, respectively, of a single signal. This is further evidenced in Yoshida at col. 8, lines 63-66, which recites that "[t]he M-ary digital modulator 4 modulates the m-bit binary digital signal into M-value symbols ($M=2^m$) to produce quadrature signals I and Q of two sequences." Accordingly, I and Q signals represent constituent portions or components of a single, original digital single.

Based on the foregoing, it is readily apparent that Yoshida discloses applying the same spreading code to both constituent parts of a single signal of a single user and is silent regarding two users (e.g., terminals), transmitting with opposite polarizations, both utilizing an identical long code. In other words, Yoshida fails to teach or suggest ***encoding the first data with the long code at the first transmission terminal comprises utilizing an identical long code also employed by a second transmission terminal transmitting signals having an opposite polarization to the first polarization*** as recited in independent claim 1. Since Yoshida does not teach or suggest terminals, transmitting with opposite polarizations, utilizing an identical long code, Yoshida fails to cure the deficiencies identified and conceded in Shattil. Accordingly, it is clear that the cited art fails to teach or suggest all aspects of independent claims 1, 15, 18, and 21.

Independent claim 8 recites "*[a] method, comprising: receiving a signal, via an antenna; dividing the signal received into a first signal, transmitted from a first transmission terminal, and a second signal, transmitted from a second transmission terminal, wherein* ***the first signal and the second signal have opposite polarizations with respect to one another; applying an identical long code to the first signal and the second signal to generate a first decoded signal and a second decoded signal, respectively****; applying a first orthogonal code to the first decoded signal to produce a first output signal corresponding to the first signal transmitted from the first transmission terminal; and applying a second orthogonal code to the second decoded signal to produce a second output signal corresponding to the second signal transmitted from the second transmission terminal.*" Similarly, independent claim 17 recites, in part, "*...applying an identical long code to the first signal and the second signal to generate a first decoded signal and a second decoded signal, respectively...*" Further, independent claim 20 recites "*...a first*

mixer configured to apply a long code to the first signal to produce a first decoded signal; a second mixer configured to apply the long code, identical to the long code applied by the first mixer, to the second signal to produce a second decoded signal..." and independent claim 26 recites, in part, "*...means for applying an identical long code to the first signal and the second signal to produce a first decoded signal and a second decoded signal, respectively...*" The cited art fails to teach or suggest such aspects as recited in independent claims 8, 17, 20, and 26.

As discussed above and conceded in the Office Action, Shattil fails to teach or suggest applying an identical long code on two separate signals having opposite polarizations and transmitted by disparate terminals. Yoshida likewise fails to teach or suggest such aspects. Yoshida, in contrast, discloses employing the same spreading code on constituent parts (e.g., in-phase and quadrature parts) of a single signal, but fails to teach or suggest applying an identical long code on two different signals transmitted from two different terminals. Accordingly, it is clear that the cited art fails to teach or suggest all aspects of independent claims 8, 17, 20, and 26.

In view of at least the foregoing, it is respectfully submitted that Shattil and Yoshida, alone or in combination, do not teach or suggest all features of the claimed subject matter as recited in independent claims 1, 8, 15, 17, 18, 20, 21, and 26 (and dependent claims that respectively depend therefrom). Accordingly, withdrawal of this rejection is respectfully requested.

CONCLUSION

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063 [QUALP825US].

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact assignee's undersigned representative at the telephone number below.

Respectfully submitted,

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